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The Ternary System, Lac 7215=*h* 4935. By R. T. A. Innes.

As a wide pair this was observed by Sir John Herschel at the Cape in 1837, and the chief star was noted as double at Melbourne in 1867, but it was first measured as a double star some years later as β 416 and Russell 298. The chief star turned out to be a rapid binary pair with a period of 33 years according to the orbit computed by Professor See. Of Herschel's companion, which is C Z $17^{h}\cdot 719$, I find the following measures :—

		″		
1837·4	130° ±	...	*h*	1 night.
1875·5	130·5	29·44	Cord. Zone Catalogue.	1 "
1876·5	130 ±	...	β	1 "
1877·6	132·4	...	Russell	1 "
1889·4	128·6	31·03	β	3 "
1891·5	128·8	30·52	do.	3 "
1892·4	129·4	30·55	do.	2 "

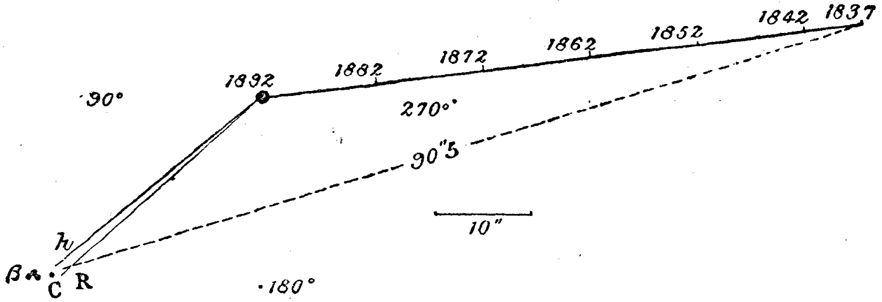
The chief star, which is yellow in colour, is *Lac* 7215 (R.A. $17^{h}\ 12^{m}\ 8^{s}$, Dec. 34° 52′·7, 1900), and has a large proper motion which is well known. The latest determination, that of Professor Porter, gives

$$\delta\ \text{R.A.} = +0^{s}\cdot 0924. \qquad \delta\ \text{Dec.} = -0''\cdot 161$$

or

$$1''\cdot 15 \text{ towards } 98^{\circ}\cdot 1.$$

The consideration of this proper motion shows that the Herschel companion travels with the binary pair.



The diagram will, perhaps, make the matter clearer. If both stars are animated by the same proper motion the position marked 1892 will be that of the chief star in relation to the measures of the companion, which are marked *h*, C, R, and β. The agreement is satisfactory.

If, however, the companion does not share in the proper

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motion the chief star should have been found along the line marked 1892–1837.

Thus at the time of the Cordoba observation the distance, instead of being 29″ as observed, would have been about 50″, in the time of *h* about 90″, the angles as well being altered.

If we assume the mass of the close pair equal to that of the Sun, its parallax will be 0″·12; and if we now see the third star under an angle equal to its semi-axis major, its period of revolution would not be greatly different from 4,000 years.

The magnitudes of the three stars are 6·1, 8·1, and 10; but it is well to state that for the latter, estimates vary from 7 to 12—viz.

Gould ...	9·5
Russell ...	7·0
Burnham...	10 to 12.

Royal Observatory, Cape of Good Hope:
1897 *December* 3.

The Wilsonian Theory and Mr. Howlett's Drawings of Sun-spots.

By the Rev. Aloysius L. Cortie, S.J.

In Dr. Wilson's paper entitled "Observations on the Solar Spots" (*Phil. Trans. R.S.* vol. lxiv. A.D. 1774), in which his theory with regard to the cavernous nature of Sun-spots relatively to the photospheric level is propounded, he particularly calls attention to the fact that the phenomenon of the unequal foreshortening of the penumbra on either side of the umbra (or umbra and nucleus in his phraseology) is only to be observed in those spots which are not subject to any disturbance, the appearances to be expected under normal conditions being sometimes counteracted when changes have occurred in the spots during their transit across the solar disc. The Wilsonian hypothesis has lately been called in question by the Rev. Mr. Howlett, whose contention is that the Sun-spots are in general elevations above rather than depressions below the photospheric level. The admirable series of enlarged drawings of the solar spots made by this indefatigable observer have been most generously presented to the Society, and are preserved in our library. From an examination of many of these drawings it would seem that the rule that has guided Mr. Howlett in the selection of his cases against the Wilsonian hypothesis is that any spot in the neighbourhood of the limb which shows the penumbra of greater extent on the side towards the centre of the Sun is a case against the cavernous theory of the spots. In the remarks in the index which precedes each volume such expressions sometimes occur as " seemed to favour Wilson, but umbra not central and the group

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